

Interoperability of Open Source Medical Record Systems

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Abstract

This poster describes the open source medical system architecture and approaches for data sharing and interoperability.

Background

The International Outreach Program has been developing various initiatives to raise cure rates in countries with limited resources. One of the major challenges that hospitals in these countries have is access to electronic patient data management tools. Two initiatives have been developed to help partner sites, namely the EMRS (Electronic Medical Record System), and POND (Pediatric Oncology Network Database). The EMRS system is a small web-based medical record system designed for pediatric oncology. POND is a smaller version of EMRS which is meant for partner sites that want to collect basic patient information designed mainly for scientific research purposes. In development of these two initiatives, it was found that each site had a strong need to customize the system to their local needs, so an open source approach was developed using PHP, MySQL and Linux. We have provided technical training to local programmers to extend the functionality of the system. There was also a strong need to be able to share selected data between partner sites and with other third party software systems for the purpose of medical consultation. As result, there is an important need to develop an architecture that allows local customization and data sharing which are often competing goals in the sense that local customization formats make it more difficult to share data. As a result, we have developed

common core set of programming code that is the same on all partner sites for both basic system functionality and data sharing.

Methods

The core SQL database we have developed is comprehensive enough to support a full EMRS for Research Data Mining and Analysis as well as a Consult System. All communications to and from the database are done through a database abstraction layer, allowing for maximum flexibility and portability between different RDMS software. In order to achieve interoperability between disparate systems we have been developing a standardized medical file interchange format. Using an XML Document Type Definition. Once this type definition specification is finalised we can exchange patient information with all applications that support this particular format. We plan to make this interchange format an open source definition.

Conclusions

Existing open standards for XML medical formats have been primarily designed for guideline representation such as GLIF [1] or medical logical decision systems such as Arden [2]. Other XML formats are either proprietary or specific to a particular type of data. What is needed is an open standard for universal data interchange of full medical record system data that can used widely.

[1] GLIF - Guideline interchange Format,

<http://www.glif.org>

[2] Arden Syntax

<http://www.hl7.org/Special/committees/Arden/arden.htm>